ATLANTIC AVE. AND UTICA AVENUE (CROWN HEIGHTS)
(DAR SITE ID #26)

Address:	Atlantic Avenue; Utica Avenue; Pacific Street Brooklyn New York, New York 11213
Tax Lot Parcel(s):	Brooklyn Block No. 1336; Lot Nos. 42, 43, 46, 48, 49, and 55
Latitude:	40.676972
Longitude:	-73.930652
Regulatory Programs Numbers/Codes:	NYSDEC VCP Site Code V00131-2 NYSDEC Spill No. 9605043, 0011321, and 9812234
Analytical Data Status:	☐ Electronic Data Available ☒ Hardcopies only ☐ No Data Available

1 SUMMARY OF CONSTITUENTS OF POTENTIAL CONCERN (COPCs) TRANSPORT PATHWAYS TO THE CREEK

The current understanding of the transport mechanisms of COPCs from the uplands portions of the Atlantic Ave. and Utica Avenue (Crown Heights) site (site) to Newtown Creek is summarized in this section and Table 1 and supported in the following sections.

Overland Transport

The site is located approximately 2.17 miles from Newtown Creek and associated waterways. This is not a complete historical or current pathway.

Bank Erosion

The site is not adjacent to Newtown Creek or associated waterways. This is not a complete historical or current pathway.

Groundwater

Groundwater investigations detected concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX); volatile organic compounds (VOCs); and semi-volatile organic compounds (SVOCs) at the site; however, the site is located approximately 2.17 miles from Newtown Creek and associated waterways. There is insufficient evidence to make a historical or current pathway determination.

Overwater Activities

This site is not adjacent to Newtown Creek or associated waterways and has no overwater activities. This is not a complete historical or current pathway.

Stormwater/Wastewater Systems

Information regarding on-site stormwater infrastructure and management was not identified in files available for review. The site is within the Newtown Creek Water Pollution Control Plant (WPCP) sewershed. Stormwater and wastewater discharges from the site flow into a combined municipal sewer system. When the combined flows exceed the system's capacity, untreated combined sewer overflows (CSOs) are discharged to Newtown Creek at Outfall NC-015 (NYCDEP 2007). There is insufficient evidence to make a historical or current pathway determination for direct discharge of stormwater, wastewater, and sewer/CSO.

Air Releases

Information regarding site air discharges was not identified in files available for review. There is insufficient evidence to make a historical or current pathway determination.

2 PROJECT STATUS

A summary of the investigation and remedial activities at the site is provided in the following table:

Activity		Date(s)/Comments
Phase 1 Environmental Site Assessment	☒	Submitted April 22, 1996
Site Characterization	☒	Limited Subsurface Site Investigation on September 9, 1996 Phase II Subsurface Site Investigation on May 28, 1997

Activity		Date(s)/Comments
Remedial Investigation	☐	
Remedy Selection	☐	
Remedial Design/Remedial Action Implementation	☒	CAP on July 15, 1997, by ATC Environmental NYSDEC approved CAP changes in 1999 Cleanup occurred from 1997 to 2000
Use Restrictions (Environmental Easements or Institutional Controls)	☒	2008 Restricted Deed
Construction Completion	☒	Remedial Action Report submitted on September 19, 2002, by ATC Environmental
Site Closeout/No Further Action Determination	☒	Site released from NYSDEC VCP on January 26, 2009
Long-term Monitoring	☒	Last Periodic Review Report submitted on April 23, 2010 Periodic Review Report due on April 9, 2020

Notes:
ATC – ATC Environmental
CAP – Corrective Action Plan
NYSDEC – New York State Department of Environmental Conservation
VCP – Voluntary Cleanup Program
Sources: ATC 2002, NYSDEC 2009, and NYSDEC 2010

- NYSDEC Site Code(s):
  - NYSDEC VCP Agreement No. V00131-2
- NYSDEC Site Managers:
  - Michael Mulqueen (during early stages)
  - Michelle Tipple (recommended Site for release from VCP)
  - Michael Haggerty (long-term monitoring)

3 SITE OWNERSHIP HISTORY

Respondent Member: ☐ Yes ☒ No

The following table provides an overview of the site's ownership history from about 1932 to the present:

Owner	Years	Occupant	Type of Operation
Unknown	circa 1932 – unknown year	GT's Filling Station	Filling station
Angelo and Frances G. Ciaccio	Unknown year – 1972	Unknown	Gas station
Framasam Realty Corporation	1972 – 1979	Unknown	Gas station
Pep Boys – Manny, Moe & Jack of Delaware, Inc.	1979 – 1998	None	Vacant lot
AutoZone, Inc.	1998 – present	AutoZone Retail Store	Automotive store

4 PROPERTY DESCRIPTION

The site is an approximately 0.45-acre, rectangular shaped lot (see Figure 1) located within the drainage area of CSO Outfall NC-015, which discharges at the head of English Kills, 2.2 miles to the northwest.

The site is located in an urban area zoned for commercial, light industrial, and residential usage. It is bordered to the north by Atlantic Avenue and an elevated rail line used by the Long Island Rail Road, to the east by Utica Avenue, to the south by Pacific Avenue (lined with commercial and residential buildings), and to the west by commercial and residential buildings (ATC 1996a; NYSDEC 2002).

5 CURRENT SITE USE

AutoZone, Inc., a retail auto parts company, currently owns, operates, and has a retail store on the site, which consists of a single story building and a paved parking lot (AutoZone 2011). The store's address is 1798 Atlantic Avenue.

6 SITE USE HISTORY

The first known business at the site was GT's Filling Station (Sanborn 1932).

In 1972, Angelo and Frances Ciaccio sold the site, subject to a dealer agreement with American Oil Company (Ciaccio 1972). The site was subject to foreclosure proceedings in 1979 (Commission of Finance 1979).

Pep Boys – Manny, Moe & Jack of Delaware, Inc. (Pep Boys), purchased the site in 1979 (Framasam Realty Corp. 1979). In 1996, a petroleum spill affecting groundwater occurred when the lot was vacant (NYSDEC 2011a). In 1996, Pep Boys entered the VCP. In 1997, underground gasoline and fuel oil storage tanks, hydraulic reservoirs, and contaminated soils were removed (NYSDEC 2011b). AutoZone purchased the site from Pep Boys in 1988 and continues to operate there today (Pep Boys 1988).

7 CURRENT AND HISTORICAL AREAS OF CONCERN AND COPCs

The current understanding of the historical and current potential upland and overwater areas of concern (AOCs) at the site is summarized in Table 1. The following sections provide brief discussion of the potential sources and COPCs at the site.

7.1 Uplands

AOCs associated with the former gas station operations at the site include five former 550-gallon gasoline underground storage tanks (USTs), three former 275-gallon fuel oil USTs, and two former hydraulic lift reservoir tanks (ATC 2002). These tanks and the soil surrounding them were removed as part of the VCP in 1997. The COPCs in both groundwater and soils were identified as:

- BTEX compounds
- N-butylbenzene, sec-butylbenzene, and tert-butylbenzene
- Isopropylbenzene and p-isopropyltoluene
- Methyl tert-butyl ether (MTBE)
- Napthalene
- N-propylbenzene
- 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene

Additionally, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, chrysene, fluoranthene, phenanthrene, and pyrene have been identified in residual soil contamination (ATC 1998a). BTEX compounds were the chemicals listed in the final NYSDEC document releasing the site from the VCP (NYSDEC 2010).

The Phase 1 Environmental Site Assessment conducted by ATC also included information about potential off-site AOCs near the site. Two registered petroleum 4,000 gallon USTs owned by Northland Marketing Corp (CITGO) were identified as being located adjacent to the site. The USTs contained unleaded gasoline and diesel.

Additionally, a site identified only as "Store/Parcel No. 32" contained two abandoned/closed USTs that held up to 550 gallons of unleaded gas and 550 gallons of leaded gas at some point. No leaks were reported with either of the 550-gallon tanks (ATC 1996a).

7.2 Overwater Activities

The site is not adjacent to Newtown Creek or any tributary waterbodies and has no overwater activities.

7.3 Spills

The following table summarizes spills identified on the site (NYSDEC 2011a):

NYSDEC Spill No.	Spill Date	Close Date	Material/Quantity Spilled	Remarks
9605043	07/12/96	01/30/09	Unknown petroleum/Unknown quantity	Spill to groundwater (NYSDEC 2012)
0011321	01/17/01	03/14/01	Unknown petroleum/1 gallon	Spill to soil (NYSDEC 2012)
9812234	01/04/99	10/17/02	Unknown petroleum/1 gallon	Spill to soil (NYSDEC 2012

Note:
NYSDEC – New York State Department of Environmental Conservation

8 PHYSICAL SITE SETTING

8.1 Geology

A north-south cross section characterizes the geology of Long Island as a wedge-shaped layer of Upper Cretaceous and Pleistocene unconsolidated sediments, thickening to the southeast. In Brooklyn, three aquifers are located between the upper glacial aquifer and the bedrock surface. Underneath the site is a thin layer of unconsolidated sediments of varying sizes. The bedrock, characterized lithologically as gneiss or schist (Precambrian, Cambrian, and

Ordovician aged), underlies the unconsolidated material. It is found at very shallow depths in Brooklyn and Queens. Structurally, the bedrock dips to the southeast (ATC 1996a).

8.2 Hydrogeology

Groundwater at the site is located in an unconfined unconsolidated aquifer (Upper Glacial Aquifer) at a depth of approximately 30 feet below ground surface (bgs). The Upper Glacial Aquifer is composed of fine to medium sands with some silt and little clay. The majority of subsurface structures in the area surrounding and including the site, including sewers and basements, do not extend below 10 to 15 feet bgs and do not intersect the water table (ATC 2002).

Three groundwater monitoring wells were installed on the site as part of the Phase II Subsurface Investigation; however, they were removed during soil excavation and replaced with five piezometers (ATC 1997b). Horizontal groundwater gradients are shallow at the site and groundwater there is believed to flow to the north-northwest towards Newtown Creek (ATC 1997c, 2002).

9 NATURE AND EXTENT (CURRENT UNDERSTANDING OF ENVIRONMENTAL CONDITIONS)

This site has an AOC located in the northern half of the site (see Attachment 1). During remedial investigation, this AOC was defined as a diagonal shaped area in the northeastern section of the site with petroleum-contaminated soil at an interval of 10 to 24 feet bgs. A small area of petroleum-contaminated soil was also found adjacent to the larger area of soil contamination at approximately 10 feet bgs.

Additionally, groundwater contamination, primarily in the form of dissolved-phase petroleum (VOCs and SVOCs), was present in the northeast and northwest section of the site (ATC 1997a). The site was closed through VCP, but some residual BTEX contamination is still found in soil and groundwater.

9.1 Soil

Soil Investigations	☒ Yes ☐ No
Bank Samples	☐ Yes ☐ No ☒ Not Applicable
Soil-Vapor Investigations	☐ Yes ☒ No

Assessment of the nature and extent of residual soil and dissolved-phase petroleum contamination occurred during the Limited Subsurface Site Investigation (1996b) and Phase II Subsurface Site Investigation (1997c) both conducted by ATC. Confirmatory soil samples were taken from the bottom and sidewalls of the excavation during the remedial action to determine when removal of contaminated soil was complete (ATC 1998b, 1998c, 2002).

The Limited Subsurface Investigation, initiated in 1996, included 11 geoprobe borings and eight test pits to determine the vertical and horizontal extent of petroleum contamination (see Attachment 1). In the subsequent Phase II Subsurface Investigation, an additional eight test pits were excavated with soil samples collected from five of the eight. These soil sample locations are shown in Attachment 1. The soil samples were analyzed for a range of VOCs (U.S. Environmental Protection Agency [USEPA] Method 8021) and SVOCs (USEPA Method 8270) related to petroleum contamination (ATC 1996b). Based on the findings, contaminated soil began at approximately 10 feet below grade and continued to approximately 22 to 23 feet below grade (ATC 1998b) in the northern portion of the site.

The detection limits for some analytes in the soil results from these investigations often exceeded the screening criterion of the NYSDEC Spills Technology and Remediation Series (STARS) Guidance Values, suggesting that the extent of soil exceeding the guidance values could have been underestimated. In the Limited Subsurface Site Investigation, elevated levels of VOCs were detected in four of the soil samples (ATC 1996b). VOCs exceeded NYSDEC STARS Guidance Values in test borings SB-1, SB-2, SB-4, and SB-11 at depths between 12 and 18 feet bgs. SVOCs exceeded NYSDEC STARS Guidance Values in test borings SB-1, SB-2, and SB-4 at depths between 12 and 18 feet bgs.

In the Phase II subsurface investigation, samples were collected to confirm that only soil deeper than 10 feet bgs was impacted (ATC 1997c). Phase II sampling results and field

evidence confirmed that contamination began at depths of approximately 10 feet below grade and continued to depths of 22 to 33 feet below grade (ATC 1998b). Selected soil results from all investigations and the remedial action are summarized in the following table:

Analyte	Units	Minimum Subsurface Soil Concentration	Maximum Subsurface Soil Concentration
SVOCs			
Anthracene	mg/kg	0.58	**1.79**
Fluoranthene	mg/kg	ND	**11.8**
Fluorene	mg/kg	ND	0.95
Naphthalene	mg/kg	ND	**0.44**
Phenanthrene	mg/kg	ND	**10.6**
Pyrene	mg/kg	ND	**10.1**
Benzo(a)anthracene	mg/kg	ND	**5.13**
Benzo(a)pyrene	mg/kg	ND	**5.17**
Benzo(b)fluorathene	mg/kg	**2.5**	**6.03**
Benzo(g,h,i)perylene	mg/kg	**1.19**	**3.03**
Benzo(k)fluoranthene	mg/kg	ND	**2.820**
Indeno(1,2,3-cd)pyrene	mg/kg	ND	**3.13**
Chrysene	mg/kg	ND	**4.66**
Dibenzo(a,h)anthracene	mg/kg	BDL	**19.81**
VOCs			
Benzene	mg/kg	ND	**0.0816**
n-Butylbenzene	mg/kg	ND	**3.33**
Toluene	mg/kg	ND	**1.020**
Napthalene	mg/kg	ND	**0.5030**
Sec-Butylbenzene	mg/kg	ND	**0.281**
Ethylbenzene	mg/kg	ND	**1.2**
Isopropylbenzene	mg/kg	ND	**0.332**
Mixed Xylenes	mg/kg	ND	**8.520**
p-Isopropyltoluene	mg/kg	ND	**474**
n-Propylbenzene	mg/kg	ND	**0.876**
1,2,4-Trimethylbenzene	mg/kg	ND	**7.780**
1,3,5-Trimethylbenzene	mg/kg	ND	**4.040**
P&m-Xylene	mg/kg	ND	**5.310**
o-Xylene	mg/kg	0.249	**3.210**

Notes:
Bold – exceeds NYSDEC STARS Guidance Value
BDL – below detection limit
mg/kg – milligram per kilogram (parts per million [ppm])
ND – non-detect
Sources: ATC 1996b ATC 1997c, ATC 1998b, and ATC 1998c

9.1.1 Soil Summary

The two subsurface investigations concluded that that SVOC and VOC contamination, particularly BTEX, began at depths of approximately 10 feet below grade and continued to depths of 22 to 33 feet below grade. Soil contamination exceeded NYSDEC STARS Guidance Values for several VOCs and SVOCs (ATC 1997c).

9.2 Groundwater

Groundwater Investigations	☒ Yes	☐ No			
NAPL Presence (Historical and Current)	☐ Yes	☒ No			
Dissolved COPC Plumes	☒ Yes	☐ No			
Visual Seep Sample Data	☐ Yes	☐ No	☒ Not Applicable		

9.2.1 Groundwater Investigations

Groundwater samples were collected from geoprobe borings during the two subsurface investigations. Three monitoring wells were installed during the Phase II Subsurface Investigation (see Attachment 2). Five monitoring wells were installed in 1997 to replace the three wells destroyed during the remedial action soil excavation (see Attachment 3). Groundwater samples were typically analyzed for a range of VOCs (USEPA Method 8021) and SVOCs (USEPA Method 8270) related to dissolved-phase petroleum contamination (ATC 1996b). Some groundwater samples were also analyzed for MTBE.

9.2.2 NAPL (Historical and Current) Presence

The presence of NAPL has not been reported at the site (ATC 2002).

9.2.3 Dissolved Contaminant Plume

During the Limited Subsurface Site Investigation groundwater samples were collected from six of the 11 geoprobe locations. Visibly discolored groundwater showing sheen and having a strong petroleum odor was detected in three of the groundwater samples, which were collected at SB-1, SB-6, and SB-7 (ATC 1996b). During the Phase II Subsurface Investigation, groundwater was collected at each monitoring well and at the 11 geoprobe

locations. Several VOCs and SVOCs detected in the geoprobe and well samples exceeded NYSDEC drinking water standards.

The maximum BTEX concentration was found in the groundwater sample for the northeast portion of the site at 6,585 parts per billion (ppb; ATC 2002). The detection limits for various chemicals in this groundwater data often exceeded the screening criterion of the NYSDEC drinking water standards, suggesting that the extent of groundwater exceeding the guidance values may have been underestimated.

Selected groundwater results from all investigations, the remedial action, and monitoring are summarized in the following table:

Analyte	Units	Minimum Groundwater Concentration	Maximum Groundwater Concentration
Ethylbenzene	µg/kg	ND	**1,260**
Toluene	µg/kg	ND	**1,400**
o&p Xylenes	µg/kg	ND	**515**
m-Xylene	µg/kg	ND	**4,680**
Mixed Xylenes	µg/kg	ND	**6,800**
Methylene Chloride	µg/kg	ND	**6.5**
n-Butylbenzene	µg/kg	ND	**760**
sec-Butylbenzene	µg/kg	<0.5	**1,150**
Isopropylbenzene	µg/kg	<0.5	**312**
p-Isopropyltoluene	µg/kg	ND	**264**
1 ,3,5-Trimethylbenzene	µg/kg	ND	**1,200**
1,2,4-Trimethylbenzene	µg/kg	ND	**1,800**
p&m-Xylene	µg/kg	ND	**1,820**
o-Xylene	µg/kg	<250	0.8
Naphthalene	µg/kg	ND	**750**
Benzene	µg/kg	ND	**450**
2-Methylnaphthalene	µg/kg	ND	**1,020**

Notes:
Bold – exceeds NYSDEC drinking water standards
µg/kg – microgram per kilogram
Sources: ATC 1996b, ATC 1997c, ATC 1998b, ATC 1998c, and ATC 2002

As previously mentioned, five monitoring wells were installed in 1997 to replace the three wells destroyed during the remedial action soil excavation. Several VOCs continued to exceed NYSDEC water quality standards in well PW-5 at the northeast corner of the site through at least July 2002 (ATC 2002).

9.2.4 Groundwater Summary

Several groundwater investigations have been conducted at the site. Pre-remedial groundwater sampling determined that shallow groundwater exceeded NYSDEC drinking water standards for several VOC and SVOC COPCs. Groundwater sampling conducted subsequent to soil excavation and groundwater remediation actions indicates that groundwater still exceeds NYSDEC drinking water standards for several VOCs—primarily BTEX—in one well located at the extreme northeast corner of the site. No further downgradient groundwater sampling data is available.

9.3 Surface Water

Surface Water Investigation	☐ Yes	☒ No
SPDES Permit (Current or Past)	☐ Yes	☒ No
Industrial Wastewater Discharge Permit (Current or Past)	☐ Yes	☒ No
Stormwater Data	☐ Yes	☒ No
Catch Basin Solids Data	☐ Yes	☒ No
Wastewater Data	☐ Yes	☒ No

9.3.1 Stormwater and Wastewater Systems

Information regarding on-site stormwater infrastructure and management was not identified in files available for review. The site is within the Newtown Creek WPCP sewershed. Stormwater and wastewater discharges from the site flow into a combined municipal sewer system. When the combined flows exceed the system's capacity, untreated CSOs are discharged to Newtown Creek at Outfall NC-015 (NYCDEP 2007).

9.4 Sediment

Creek Sediment Data ☐ Yes ☐ No ☒ Not Applicable

Sediment investigation information was not found in reviewed documents.

9.5 Air

Air Permit ☐ Yes ☒ No

Air Data ☐ Yes ☒ No

Information related to air emissions was not found in reviewed documents.

10 REMEDIATION HISTORY (INTERIM REMEDIAL MEASURES AND OTHER CLEANUPS)

The following remedial actions were completed under the Voluntary Cleanup Agreement (VCA) to clean up the soil at the site:

- Removal of five 555-gallon gasoline USTs
- Removal of three 275-gallon fuel oil USTs
- Removal of two hydraulic lift reservoir tanks
- Excavation and disposal of approximately 2,200 tons of petroleum-contaminated soils (ATC 2002)

The soil excavation extended from grade to the water table, approximately 28 feet bgs (see Attachment 4; ATC 2002). Some contaminated soils associated with the former UST areas in the northeast corner of the site remained following soil excavation, due to concerns about undermining the adjacent sidewalk (ATC 2002).

The following remedial actions were completed under the VCA to address post-soil-removal groundwater contamination in the northeast corner of the site:

- Performance of five vacuum enhanced recovery (VER) events
- Injection of Oxygen Release Compound (ORC)
- Installation of OCR socks into monitoring well PW-5
- Quarterly (April 1999 through March 2002) groundwater monitoring and reporting

During the five VER events (ATC 2002), 43.77 pounds of hydrocarbons were recovered. For the 1999 ORC injection events, the injection of 600 pounds of ORC was monitored to a depth of 38 feet into impacted site groundwater. ORC was injected at 15 geoprobe borings along the eastern edge of the site to cover the hot spot of the plume (PW-4 and PW-5).

As described in Section 9.2, groundwater sampling conducted subsequent to soil excavation and groundwater remediation actions indicates that groundwater still exceeds NYSDEC drinking water standards for several VOCs—primarily BTEX—in well PW-5, located at the extreme northeast corner of the site (see Attachment 5).

The site was released from the VCP in 2008 because NYSDEC determined that the owners, AutoZone had successfully implemented the requirements of the VCA (NYSDEC 2008). Although the NYSDEC Site Manager noted that groundwater contamination remained above NYSDEC STARS standards, it was decided that, based upon a lack of sensitive receptors, the reduction in contaminant mass was sufficient to grant a no further action letter (NYSDEC 2008). Following the completion of the cleanup a Deed Restriction was provided on November 5, 2008, to AutoZone, Inc., limiting site use to commercial or industrial and prohibiting groundwater use without treatment (NYCDOF 2008).

11 BIBLIOGRAPHY/INFORMATION SOURCES

ATC (ATC Environmental), 1996a. *Phase 1 Environmental Site Assessment: Vacant Property on Utica Avenue Between Atlantic Avenue and Pacific Street*. Prepared for Pep Boys. April 22, 1996.

ATC, 1996b. *Limited Subsurface Site Investigation. Vacant Property on Utica Avenue Between Atlantic Avenue and Pacific Street*. Prepared for Pep Boys. September 9, 1996.

ATC, 1997a. *Corrective Action Plan*. Atlantic and Utica Avenue—Southwest Corner Lot (Crown Heights) Brooklyn, New York. Prepared for Pep Boys. July 15, 1997.

ATC, 1997b. *UST Removal and Contaminated Soil Excavation Report*. Crown Heights. Prepared for Pep Boys. December 9, 1997.

ATC, 1997c. *Phase II Subsurface Site Investigation*. Prepared for Pep Boys. May 28, 1997.

ATC, 1998a. *Final Objectives Report*. Crown Heights. Prepared for Pep Boys. June 16, 1998.

ATC, 1998b. Third Monthly Progress Report. Crown Heights. Prepared for Pep Boys, et al. January 5, 1998.

ATC, 1998c. Fourth Monthly Progress Report. Crown Heights. Prepared for Pep Boys, et al. February 9, 1998.

ATC, 2002. *Remedial Action Report, Volume 1 of 2.* Autozone Crown Heights Site, Atlantic and Utica Avenues, Brooklyn, New York. NYSDEC Spill No. 96-05043. NYSDEC VCP No. V00131-2. September 19, 2002.

AutoZone, Inc., 2011. Autozone. Accessed December 21, 2011. Available from: http://www.autozone.com/autozone/

Ciaccio, Angelo, 1972. Indenture between Angelo Ciaccio and Frances G. Ciaccio and Framasam Realty Corp. May 15, 1972.

Commission of Finance, 1979. Foreclosure Notice. April 18, 1979.

Framasam Realty Corp., 1979. Indenture to Pep Boys – Manny, Moe and Jack of Delaware, Inc. October 10, 1979.

NYCDEP (New York City Department of Environmental Protection), 2007. *Landside Modeling Report, Sewershed Characteristics and Model Calibration.* City-Wide Long Term CSO Control Planning Project. Newtown Creek WPCP Service Area. Draft. New York City Department of Environmental Protection, Bureau of Engineering Design and Construction. July 2007.

NYCDOF (New York City Department of Finance), 2008. Property transfer to Wayne D. Young AutoZone, Inc. New York City Department of Finance, Office of the City Register. November 10, 2008.

NYSDEC (New York State Department of Environmental Conservation), 2002. Central Office VCP Coordinator for the Region. Letter From Michelle Tripple (Project Manager). Form No. 9 Technical Satisfactory Completion Memorandum. March 2002.

NYSDEC, 2008. Project Completion and Recommendation to Issue Release Voluntary Cleanup Agreement No. V00131. Intersection of Atlantic Avenue and Utica Avenue (Crown Heights). Michael Haggerty. December 30, 2008.

NYSDEC, 2009. Voluntary Cleanup Agreement. Legal Release of Site. Pep Boys Site (1792-1800 Atlantic Avenue, 56-70 Utica Avenue and 1787-1795 Pacific Street, Brooklyn, Kings County, New York [West side of Utica Avenue between Atlantic Avenue and Pacific Street]), Brooklyn, Kings County, VCP Site No. V00131-2. Michael J. Lesser. January 26, 2009.

NYSDEC, 2010. *Division of Environmental Remediation Periodic Review Evaluation Report*. May 24, 2010.

NYSDEC, 2011a. Spill Incidents Database Search Details. Spill Record 9605043. Accessed on December 20, 2011.
Available from
http://www.dec.ny.gov/cfmx/extapps/derexternal/spills/details.cfm?pageid=2

NYSDEC, 2011b. Environmental Site Remediation Database. Accessed on December 20, 2011.
Available from: http://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm

Pep Boys (Pep Boys – Manny, Moe and Jack of Delaware, Inc.), 1988. Indenture to AutoZone Development Corp. October 21, 1988.

Sanborn (Sanborn Map Company), 1932. *Insurance Maps of the Borough of Brooklyn, New York*. Volume 7: Sheet 2. 1932.

12 ATTACHMENTS

Figure

Table

Supplemental Attachments

Table 1

Potential Areas of Concern and Transport Pathways Assessment – Atlantic Ave and Utica Ave (Crown Heights)

Potential Areas of Concern	Media Impacted					COPCs														Potential Complete Pathway						
						TPH			VOCs																		
Description of Areas of Concern	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	Creek Sediment	Gasoline-Range	Diesel – Range	Heavier – Range	Petroleum Related (e.g., BTEX)	VOCs	Chlorinated VOCs	SVOCs	PAHs	Phthalates	Phenolics	Metals	PCBs	Herbicides and Pesticides	Dioxins/Furans	Overland Transport	Groundwater	Direct Discharge – Overwater	Direct Discharge – Storm/Wastewater	Discharge to Sewer/CSO	Bank Erosion	Air Releases
Former on-site USTs and associated underground piping	?	√	√	?	?	√	√	√	√	√	?	√	√	?	?	?	?	?	?	--	?	--	--	?	--	?

Notes:
√ – COPCs are/were present in areas of concern having a current or historical pathway that is determined to be complete or potentially complete.
? – There is not enough information to determine if COPC is/was present in area of concern or if pathway is complete.
-- – Current or historical pathway has been investigated and shown to be not present or incomplete.

BTEX – benzene, toluene, ethylbenzene, and xylene
COPC – constituent of potential concern
CSO – combined sewer overflow
PAH – polycyclic aromatic hydrocarbon
PCB – polychlorinated byphenyl
SVOC – semi-volatile organic compound
TPH – total petroleum hydrocarbon
UST – underground storage tank
VOC – volatile organic compound

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- USEPA Sample Locations (Surface and Subsurface)
- Shoreline (NYC Dept. of Information Technology, 2006)
- USGS Nat'l Elev. Dataset 5-foot Contours
- Selected Site Property Boundary
- Neighboring Site Property Boundary

Outfall Class

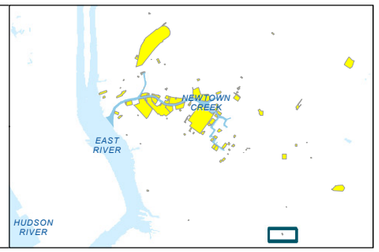
- Direct Discharge
- General
- Highway Drain
- Major Stormwater Outfall
- SPDES
- Storm Drain

NOTES:

1. Outfall Labeling: BB: Bowery Bay; NC(B/Q): Newtown Creek, Brooklyn/Queens; ST: Stormwater.
2. Outfall locations are preliminary, compiled, estimated data based on New York City Department of Environmental Protection (NYCDEP) maps and tabulated data and other resources. Many outfall locations were taken from the New York City Shoreline Survey Program: Newtown Creek Water Pollution Control Plant Drainage Area, NYCDEP, March 31, 2003. Other locations were taken from an excerpt from a similar report from 2008 (the complete report was not included in files available for review). Finally, some outfall locations were inherited from previous Anchor QEA and Newtown Creek Project work. Latitudinal and longitudinal data provided in the 2003 and 2008 NYCDEP reports were rounded to the nearest second. This resulted in potential outfall location discrepancies of up to approximately 200 feet. All outfall locations are currently under field verification.
3. Aerial Photos: New York State Division of Homeland Security and Emergency Services, 2010.
4. Site Boundaries are based on New York City parcels data.
5. Coarse topographic contours are derived from U.S. Geological Survey 10-meter data.

Feet

0 100 200 300 400



ANCHOR QEA

DRAFT

Figure 1

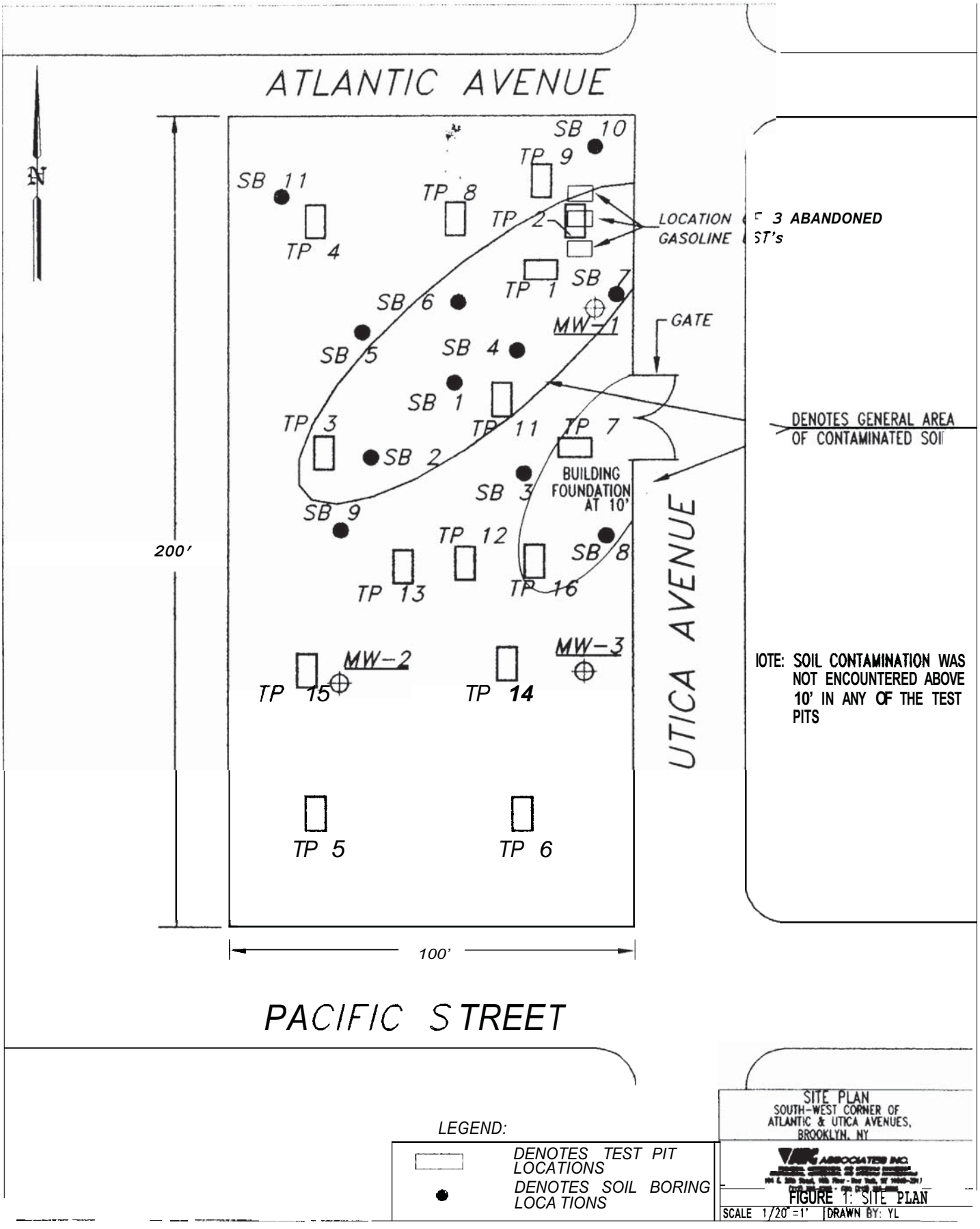
Site Vicinity Map

Draft Upland Site Summary: Atlantic Ave. and Utica Avenue (Crown Heights)

Newtown Creek RI/FS

SUPPLEMENTAL ATTACHMENTS

Attachment 1



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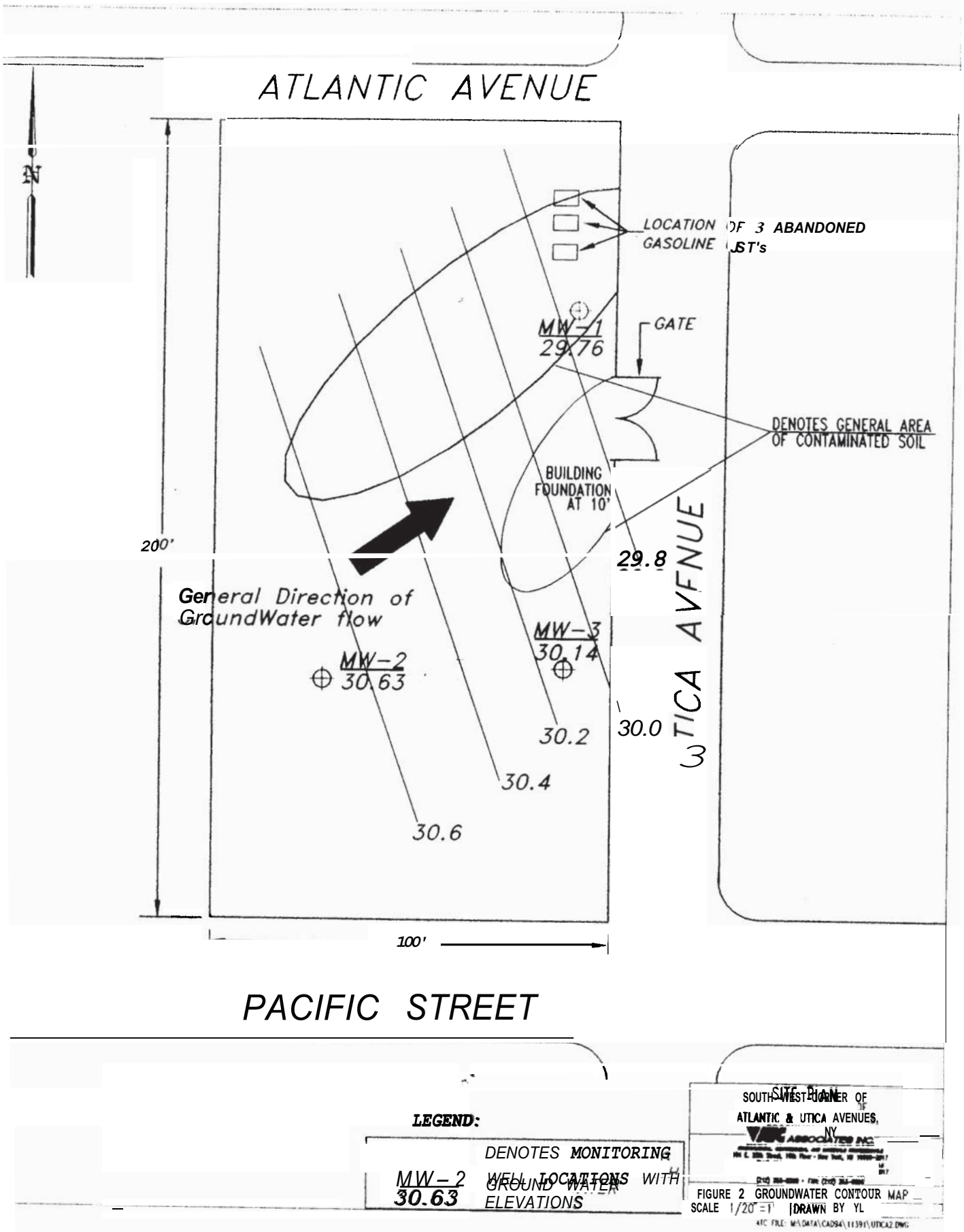

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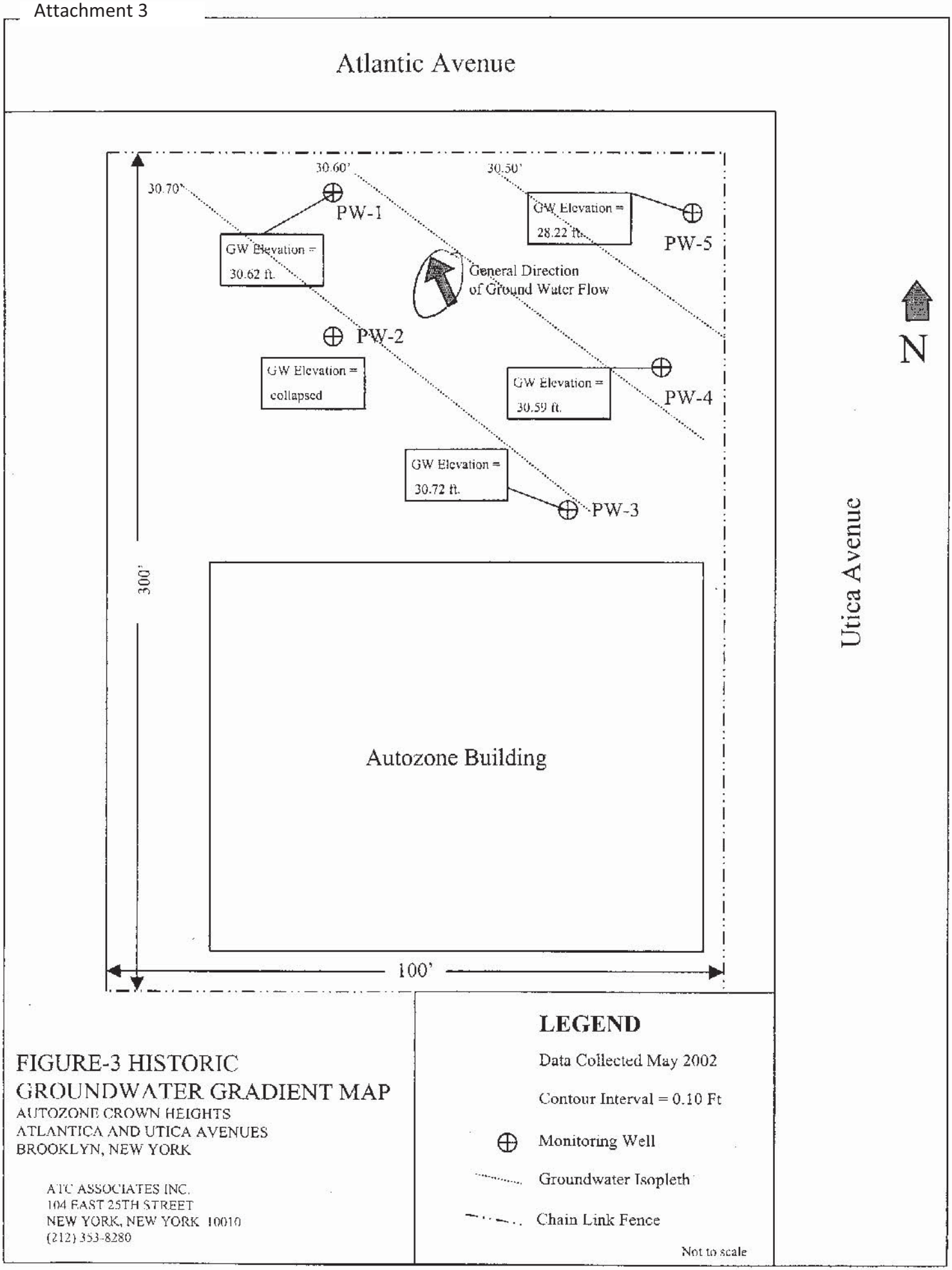
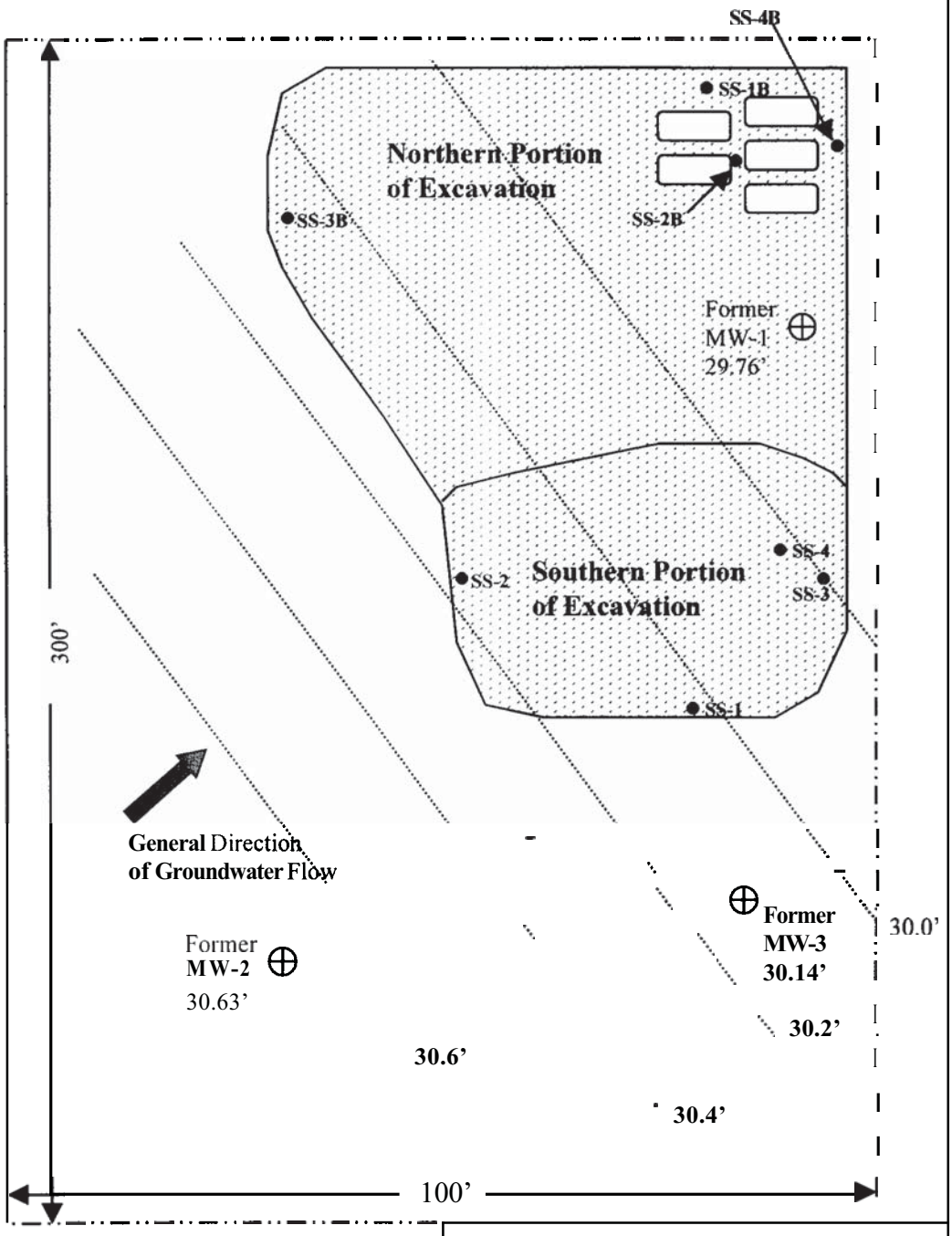


FIGURE-3 HISTORIC
GROUNDWATER GRADIENT MAP
AUTOZONE CROWN HEIGHTS
ATLANTICA AND UTICA AVENUES
BROOKLYN, NEW YORK

ATC ASSOCIATES INC.
104 EAST 25TH STREET
NEW YORK, NEW YORK 10010
(212) 353-8280

Atlantic Avenue



LEGEND

- Area of Excavation
- Former Monitoring Well
- End Point Soil Sample Location
- Groundwater Isopleth
- Chain Link Fence
- Former 550-gallon UST

Not to scale

FIGURE 1 **SITE** PLAN
CROWN HEIGHTS SITE
BROOKLYN, NEW YORK

PREPARED BY: DAVID WINSLOW

ATC ASSOCIATES INC.
104 EAST 25TH STREET
NEW YORK, NEW YORK 10010
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Attachment 5

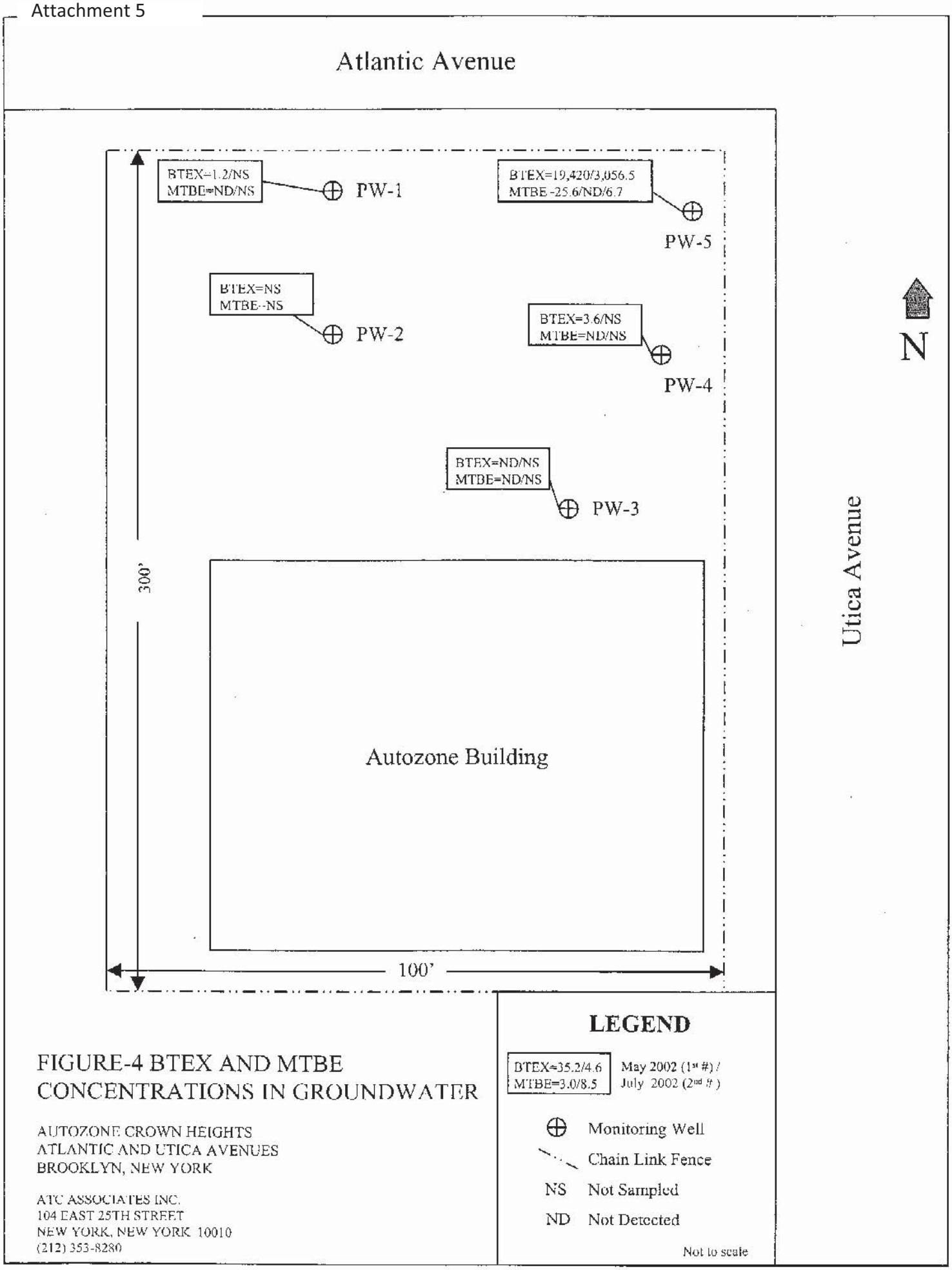

FIGURE-4 BTEX AND MTBE CONCENTRATIONS IN GROUNDWATER

AUTOZONE CROWN HEIGHTS
ATLANTIC AND UTICA AVENUES
BROOKLYN, NEW YORK

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